

outputting a feedback force in at least one of the plurality of degrees of freedom of the user-manipulable object, the feedback force responsive to the locative signal.

56. (NEW) The method of claim 55, wherein the user-manipulable object includes a stylus coupled to a mechanical linkage, the mechanical linkage configured to enable the user-manipulable object to be movable in the plurality of degrees of freedom.

57. (NEW) The method of claim 56, wherein the stylus is adapted for at least one of hand use, foot use, and mouse use.

58. (NEW) The method of claim 55, wherein the image displayed in the graphical environment includes a cursor, a motion of the cursor being correlated with the position and the orientation of the user-manipulable object.

59. (NEW) The method of claim 55 further comprising using the feedback force to effect a motion of the user-manipulable object in the at least one of the plurality of degree of freedom.

60. (NEW) An apparatus, comprising:

a user-manipulable object moveable in a plurality of degrees of freedom;

at least one sensor coupled to the user-manipulable object, the at least one sensor being operative to provide a locative signal associated with a position and an orientation of the user-manipulable object in the plurality of degrees of freedom; and

a force generator coupled to the user-manipulable object and configured to output a feedback force in at least one of the plurality of degrees of freedom of the user-manipulable object, the feedback force correlated with the locative signal.

61. (NEW) The apparatus of claim 60, wherein the locative signal is configured to enable a display an image in a graphical environment, the image is correlated with the position and the orientation of the user-manipulable object.

62. (NEW) The apparatus of claim 60, wherein the user-manipulable object includes a stylus coupled to a mechanical linkage, the mechanical linkage configured to enable the user-manipulable object to be movable in the plurality of degrees of freedom.

63. (NEW) The apparatus of claim 62, wherein the stylus is adapted for at least one of hand use, foot use, and mouse use.

64. (NEW) The apparatus of claim 62, wherein the mechanical linkage includes a plurality of joints, at least one joint from the plurality of joints is coupled to a support base.

65. (NEW) The apparatus of claim 64, wherein the plurality of the joints include at least one rotary joint.

66. (NEW) The apparatus of claim 65, wherein the plurality of the joints include at least one linear joint.

67. (NEW) The apparatus of claim 64, wherein the feedback force operates to effect a motion of the user-manipulable object associated with at least one joint from the plurality of the joints.

68. (NEW) The apparatus of claim 67, wherein the feedback force includes at least one of a resistive force and an elastic force.

69. (NEW) The apparatus of claim 60, further comprising a processor in communication with the at least one sensor and the force generator, the processor operable to receive the locative signal from the at least one sensor and output a control signal to the force generator, the control signal causing the force generator to output the feedback force.

70. (NEW) An apparatus, comprising:

a mechanical linkage having a first end and a second end, the first end of the mechanical linkage being coupled to a stylus, the second end of the mechanical linkage being coupled to a

support base, the mechanical linkage including a plurality of joints configured to allow the stylus to be manipulable in a plurality of degrees of freedom;

a plurality of sensors coupled to the plurality of joints of the mechanical linkage, the plurality of sensors operative to provide a locative signal associated with a position and an orientation of the stylus; and

a force generator coupled to the mechanical linkage, the force generator configured to output a feedback force responsive to the position and the orientation of the stylus.

71. (NEW) The apparatus of claim 70, further comprising a processor in communication with the sensors and the force generator, the processor operable to receive the locative signal from the plurality of sensors and output a control signal to the force generator, the force generator configured to output the feedback force in response to the control signal.

72. (NEW) The apparatus of claim 70, wherein the processor is operable to send an image signal configured to enable an image being displayed in a graphical environment, the image correlated with the position and orientation of the stylus.

73. (NEW) The apparatus of claim 70, further comprising an auxiliary sensor coupled to the stylus.

74. (NEW) The apparatus of claim 73, wherein the auxiliary sensor includes at least one of an ultrasonic sensor, an optical sensor, and a magnetic sensor.

75. (NEW) The apparatus of claim 70, wherein the plurality of degrees of freedom include at least five degrees of freedom.

76. (NEW) The apparatus of claim 70, wherein the stylus is adapted for at least one of hand use, foot use, and mouse use.

77. (NEW) The apparatus of claim 70, further comprising a resistance mechanism coupled to the mechanical linkage.

78. (NEW) The apparatus of claim 77, wherein the resistance mechanism includes at least one of counter weights and springs.

79. (NEW) A processor-executable program, stored on a computer-readable medium, comprising:

β¹ code to receive a locative signal associated with a position and an orientation of a user-manipulable object in a plurality of degrees of freedom;

code to display an image in a graphical environment, the image correlated with the position and the orientation of the user-manipulable object; and

code to output a feedback force in at least one of the plurality of degrees of freedom of the user-manipulable object, the feedback force responsive to the locative signal.

80. (NEW) The processor-executable program of claim 79, the image including a cursor displayed in the graphical environment, the processor-executable program further comprising:

code to correlate a motion of the cursor with the position and the orientation of the user-manipulable object.

81. (NEW) The processor-executable program of claim 79, wherein the feedback force is associated with the at least one of the plurality of degrees of freedom of the user-manipulable object.
